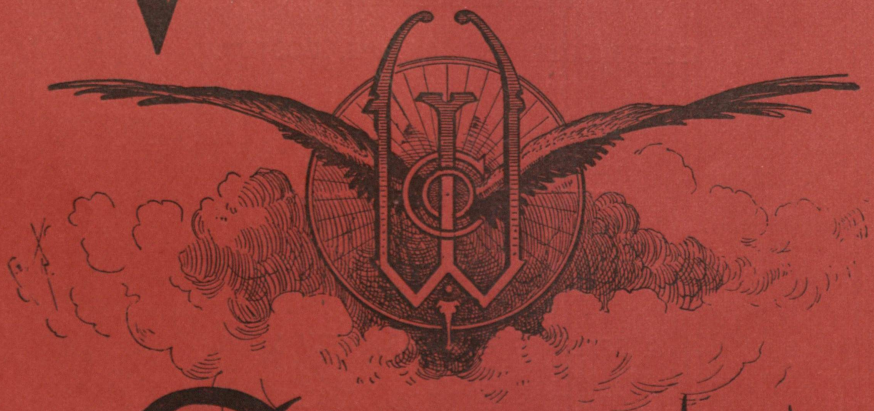
VICTOR



CYCLES

OVERMAN WHEEL CO.

182-188 COLUMBUS AVE.

BOSTON

OFFICE AND SALESROOMS:

182–188 COLUMBUS AVENUE, BOSTON.

FACTORY:

CHICOPEE FALLS, MASS.

SPECIAL AGENTS:

A. G. SPALDING & BROS., NEW YORK.

A. G. SPALDING & BROS., CHICAGO.

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OVERMAN WHEEL COMPANY.

1888.

VICTOR CYCLES are not new.

Victor Cycles are not cheap.

For six years they have compelled the esteem of the best riders in the land.

Though thousands make up the family of Victor riders, it is yet an exclusive family composed only of those who appreciate the fact that it is genuine economy to buy the best.

As the horseman is judged by his beast, so is the cyclist by his wheel.

"The apparel oft proclaims the man;" and to-day, he who rides a Victor is looked upon as a wheelman of judgment. His choice is sufficient proof that he appreciates merit.

Whether mounting the hill, coasting the grade, or spinning the long miles, the Victor is nowhere less than Victor. Its reputation has caused it to be freely copied; and it is well known that high grade cycles, in common with other lines of fine goods, are made to suffer by the cheap imitations which are offered by makers whose chief aim is to market an inferior article by trading upon the reputation of those of known merit.

For 1888 we present a much larger line of cycles than heretofore, and one in which each machine will show its share of the results of the world's intelligent thought and endeavor during the past year. Our board of experts has been busy grappling with the cycle problems, as they have arisen, and constantly experimenting with all new devices, till we feel assured that we present to the public a line of wheels which combine the best of the old with what is proved to be good in the new.

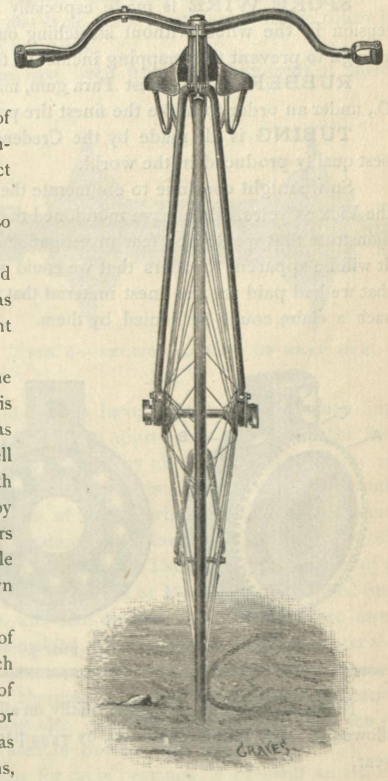

FIG. 1 — FRONT VIEW VICTOR LIGHT ROADSTER.

The Victor Tricycle is a perfect machine in all parts. Having ridden it some three or four weeks, I must say there is not a part I should wish different. Many have spoken of its completeness and beauty. *J. B. CHADDOCK, Batavia, N. Y.*

New features are not always improvements. Much threshing is needed to separate grain from chaff.

We will not burden the public with descriptions of intricate machinery and detailed accounts of methods. Processes are nothing, products everything. We point with pride to the wheels we make; and it is needless for us to assure riders that it would be impossible to produce such machines without the best plant and materials, combined with labor long skilled in the art of cycle-making, — requirements which are fully met in our own factory, fitted with machinery unexcelled for doing the finest work.

MATERIAL. — *Our steel* is the result of a great deal of experimenting, for the purpose of finding out what steel is best adapted to the great strain to be borne in the various parts of a bicycle. It is made without limit as to the cost of production; and the entire lot for the output of the coming year was made at one time in order to insure uniformity in quality. This cannot be when makers buy their steel in small, scattering lots, as it is impossible to make different lots of steel precisely alike.

SPOKE WIRE is made especially for the purpose, and is adapted to stand the tension in the wheel without stretching out of shape, and, at the same time, to be soft enough to prevent the snapping incidental to a brittle wire.

RUBBER is the finest Para gum, made by the B. F. Goodrich Company, of Akron, O., under an order to make the finest tire possible, without regard to cost.

TUBING is all made by the Credenda Company, of Birmingham, Eng., and is the best quality produced in the world.

So we might continue to enumerate the various articles of material which are used in the Victor Cycles. We have mentioned the names of some of the makers in order to demonstrate that we do not fear investigation as to the kind of stuff we put in our machines. It will be apparent to riders that we could not use the names of these parties and claim that we had paid for the finest material that they could make, if there was any chance that such a claim could be denied by them.

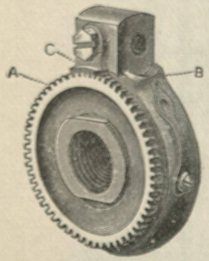

FIG. 2.
BOWN'S BALL BEARING.

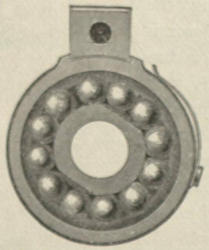

FIG. 3.
CAP REMOVED.

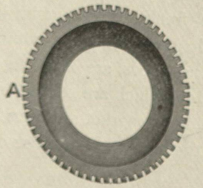

FIG. 4.
CAP.

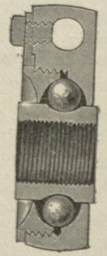

FIG. 5.
SECTION.

NOTE. — The cap A bears equally on all balls. By screwing it up one notch the space allowed to each ball is lessened by $\frac{1}{1500}$ part of an inch, making a perfect adjustment for wear.

BEARINGS. — Two points, above all others, are important in cycle-making — rigidity and minimum friction. To both we have given a great deal of attention, and will ask the reader to study the following description, and learn how we have made a bicycle

I have been riding your wheel for two seasons, and I have never used any other wheel, and never intend to ride any but the great and only Victor.

L. F. SPALDING, Cincinnati, O.

as rigid as a steel bar and with so little friction that the wheels almost seem to run themselves.

The enemy which cycle-makers have most to contend with is friction. The question of cycle journal bearings has been a wide and troublesome one from the beginning. Two great obstacles were to be overcome: first, friction; second, wear. A bearing may be ever so nicely fitted, but without perfect means for adjustment it will soon wear and become loose. It is now conceded by all that cycle bearings must be balls, so arranged that a single row or circle of them will form a complete journal bearing. The balls and the surfaces on which they travel must be as hard as glass, and above all and most important, there must be perfect means for adjusting the surfaces which come in contact with the balls, so that when there is wear, even though it be as little as the fifteen hundredth part of an inch, the bearing can be altered to compensate for such wear. In a word, a cycle bearing must be in that apparently paradoxical condition, at the same time very tight and very loose; that is, perfectly free to spin and entirely rigid, allowing no shake in the parts. It can be seen by any one, mechanic or not, that cycle parts must travel in the course intended, and avoid the slightest deviation from that track.

To accomplish these results many devices have been tried, and hundreds of patents taken out in this country and Europe. In 1877 there was patented to William Bown, of England, the invention of Joseph Henry Hughes, which promised to fulfil all the requirements of a perfectly adjustable ball bearing for cycles, and it is needless to say that the invention was warmly welcomed by all riders, while many makers and inventors attempted to find a method by which they could evade the claims of this patent, and at the same time accomplish practically the same results. After ten years, during which time hundreds of other plans have been tried and much litigation had in the courts with those who have attempted to appropriate the device, the Bown patent to-day is stronger than ever, and is acknowledged by all fair minds to be the only method by which a practical cycle bearing can be made. It is a fact, to-day, that no other bearing is succeeding, and that all modifications of this bearing which have any practicability are paying a royalty for the use of this patent, and their makers are only introducing modifications in order to claim an individual bearing. The principal makers of the world pay tribute to this invention. In 1884 we purchased of Mr. Bown the United States patent for this invention, and have since been exclusive owners. We are therefore owners of the principal patent which bears upon cycle-making. In the Victor Light Roadster there are no bearings except ball bearings. It is customary with makers to add these expensive bearings to the different parts only as ordered, charging extra for each pair of ball bearings. As we believe these essential we use nothing else. The illustrations will show the very simple and perfect method for adjustment used in Bown's ball bearings.

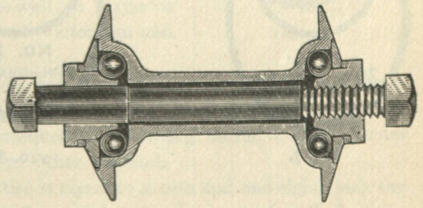

FIG. 6 — SECTIONAL VIEW OF REAR HUB.

BALLS. — The production of steel balls for cycle bearings is of itself an art, each ball having an infinite number of diameters, which must be the same if the ball is round, and it must be round. An idea of the nicety of the calculation necessary in making these balls may be had from the fact that they are gauged to $^1/_{4000}$ part of an inch. While a number of makers have been able to produce round balls, we know of but one

After three years' usage over Maine and Canadian roads, I am convinced that the Victor is unsurpassed — in short, that it is Victor with a big V.

R. F. SAWYER, Portland, Me.

make of ball in which uniformity of size is obtained. These are known as Æolus balls, and are used in all our bearings, which fact will be appreciated by experienced riders. Heretofore, in replacing a ball, the bearing has been almost invariably thrown out of true by the introduction of a ball of different size. It is apparent that if one ball is $^1/_{1000}$ of an inch larger than its fellows, this one ball will take all the strain until it has either plowed a furrow in the case, or is itself crushed. In either case the bearing is ruined. Riders are cautioned to use only Æolus balls in Victor bearings, and to obtain them directly from us or responsible agents, as it would be impossible for riders to detect the minute differences without micrometers. The sizes used are as follows: In pedals, 187½ one-thousandths; in front and back wheels, 312½ one-thousandths.

The Æolus balls are rolled cold, instead of being turned, as a great many balls are, which are now on the market. It is impossible to use the highest grade steel in a turned ball. A low grade steel must be used, since it is evident that a cutting tool can only cut material which is much softer than the material of which the tool itself is made. Turned balls cannot be made of tool steel. Nothing else is used in the Æolus balls.

RIMS. — We were the first American makers to manufacture hollow rims, and have

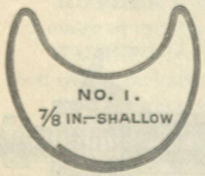

FIG. 7.

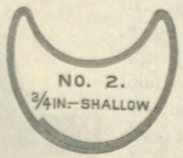

FIG. 8.

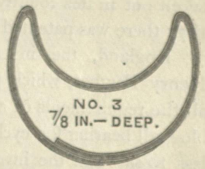

FIG. 9.

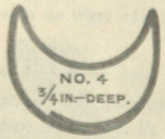

FIG. 10.

FIG. 11.

FIG. 12.

adopted the Warwick Hollow Rim (of which we are sole United States owners), as being one which has been found to stand the test of use on American roads. The Warwick rim is made of a single piece of cold rolled sheet steel, so lapped as to give double thickness in the bottom, where the spokes are attached, and where the greatest strain is; likewise double the body of metal in which to form the bed for the nipple-head, thus preventing the nipple from bedding or necking into the rim-hole, as is sure to be the case where the attempt is made to seat a nipple in too thin steel. The importance of a rigid rim cannot be overestimated. If the rim is out the wheel is wrong. The Warwick rim, as made by us, has two distinct features not found elsewhere: first, we use a heavier and stiffer steel; second, the tire-chamber is shallower.

As we do not use cement with our compressed tires, we do not have to provide storage room in the rim for the wax; and as our method of attaching is positive, and does not depend upon the amount of contact between rim and rubber, we are able to make a very

I must say that the Victor is the **easiest** *running and* **easiest** *riding wheel I was ever on, and I have owned six, and ridden several besides.*

I. C. DOAN, Richmond, Ind.

shallow rim, which, while most of its advantages accrue to the tire, possesses this advantage for the rim — that being very shallow it has great lateral strength.

By the use of this rim, and the combination with it of the tangent spoke, we produce a wheel which it will be found simply impossible to buckle.

Buckling, or springing out of round on receiving a lateral strain, is the most common of difficulties with bicycle wheels.

TIRES. — No feature in wheel-making bears more directly upon the comfort and safety of rider and machine than the rubber band which encircles the wheel. We are indebted to rubber for our enjoyment of cycling. The requirements of a tire are, first, elasticity; second, durability; third, perfect attachment to the wheel. The elasticity of rubber depends upon displacement. Rubber is as dense as iron when confined, but thoroughly elastic when allowed room for displacement. Tires, as heretofore made, have been one-half outside, unconfined, and therefore elastic, one-half inside, and confined, therefore inelastic — the inner half of the tire serving only for the purpose of attaching the rubber to the rim, thus contributing almost nothing to the elasticity of the tire, — so that for this purpose, it might as well be made of wood or leather. See Fig. 13, sectional view of Victor rim and tire.

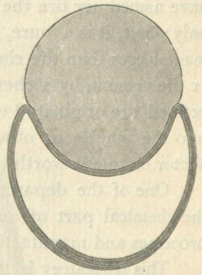

FIG. 13.

As stated under the head of Rims, we do not depend upon the amount of contact between rubber and rim, in attaching tires, so that we make the tire-chamber of our rim exceedingly shallow, thus exposing, and consequently rendering useful, a much greater proportion of the tire, than is exposed by any other method.

The elasticity of our seven-eighths inch tire is equal to a one and one-eighth inch tire attached by cement. Durability of the tire is insured by our compressed method, as we do not stretch the rubber, but use a tire larger than the wheel, and compress it into the rim by means of clamping machinery. A tire which is stretched into the rim tears open at every cut, soon becoming ragged and ruined by contact with the stones and uneven surfaces of the roads, while cuts in compressed tires close up and do not enlarge. Rubber, when compressed, is far less easily cut, the tendency being to temporarily dent the rubber instead of cutting into it, as is the case in a stretched rubber which resists pressure. We claim that the Victor compressed tire will wear twice as long as the ordinary stretched tire fastened with cement.

If the tire is attached in such a way that it can be pulled out (which means that it can come out on the road), it is not useful, but dangerous. We are the only makers in the world who guarantee tires to stay in, and who invite the public to pull them out if they can. Our tires will be torn to pieces, bit by bit, before they will part from the rim. We use no cement, but by a chemical process, which admits of the tire being easily taken out to replace spokes, we attach the rubber directly to the rim.

This tire is so good that competitors have found it necessary to invent objections to it, and the report has been circulated that Victor wheels must be returned to the factory to have a spoke replaced. This found credence with some riders, because they were unable to force the tires out, and were not aware of the fact that by the application of heat to the rim, though in no other way, Victor tires may be quickly and easily detached, and perfectly replaced. [Full particulars sent on application.] It is not necessary to take the tire out

If ever I have been satisfied I am with my Victor, bought in spring of '86. It is in constant use, and has carried me over some of the worst roads in the country, without a cent for repairs. *OTTO H. WULFEKUHLER, Leavenworth, Kansas.*

Secy.-Treas. Kan. Div. L. A. W., and Secy.-Treas. Leavenworth Co. Wheelmen.

in order to replace or alter the tension of a spoke. By means of a nipple grip [by mail, fifty cents] the nipples can be turned to replace a spoke, thus leaving the tire undisturbed.

The Victor compressed tire cannot be appreciated without mounting the wheel. All vibration is lessened. We have abandoned red sulphuret of antimony, as its only use is to adulterate the rubber and give it a red color. We are using the finest Para gum, with no addition except sulphur enough to vulcanize the rubber, thus making the purest tire possible. It is much more expensive than the antimony tire, but gives far better results in wear. Our tires, then, will be found to be a gray black, or the color of virgin gum. We have named our tire the "compressed tire." It differs from other tires in these respects only: first, it is a pure, gum rubber; second, it is not stretched, as all others are, but is made larger than the rim, and compressed into the rim; third, it is attached without wax, or tire cement, by a chemical process, uniting the rubber directly with the rim. The compressed tire originated with us, and is controlled by us. Our price for compressing tires into the wheels of other bicycles is ten dollars a pair; we therefore consider that the Victor bicycle is worth ten dollars more on this account.

One of the departments of our factory is a thoroughly equipped laboratory, in which the chemical part of our tire process will be performed, together with all other chemical processes and manufactures of the Company.

This laboratory is in charge of a professional chemist; therefore the best results are assured.

WELDLESS STEEL TUBING is used for all hollow parts, and everything is hollow that will admit of it. This tubing is a marvel of strength and lightness, and is essential to the best work. It is very thin, and finished inside and out to a gauge. There is not a seam nor a joint in it, thus making an ideal frame for cycles. Our spines, forks, handle-bars, and pedal-centers are all made of this tubing.

Harrington's Enamel.

There is "enamel," and "enamel," but the original and best is Harrington's Enamel, which is used on nine-tenths of the high grade machines in Europe. It has stood the test of years and is without a rival. We are sole American owners of this process, and use it on all our products. It is all polished,—no varnish or Japan used. It can be re-finished by rubbing after years of wear.

We are now able to make the following very low prices for re-enameling: —

Large wheel	$3.50
Small "	1.50
Back-bone	1.75
Fork	1.25

We also quote the following prices for completely re-finishing bicycles: —

Standard finish, enamel with nickel trimmings	$10.00
Extra finish, rims and spokes enameled all other parts nickeled	12.00

We think these prices are lower than have ever been made before. After we have "done over" your old machine, the finish on it will be in every respect equal to that on a new machine.

I don't believe there is a machine made will ride through sand with as little trouble, and loose stones with as much safety, as the Victor. My tire is hardly scratched.

FRED E. EASTMAN, Portland, Me.

The Victor Light Roadster Bicycle.

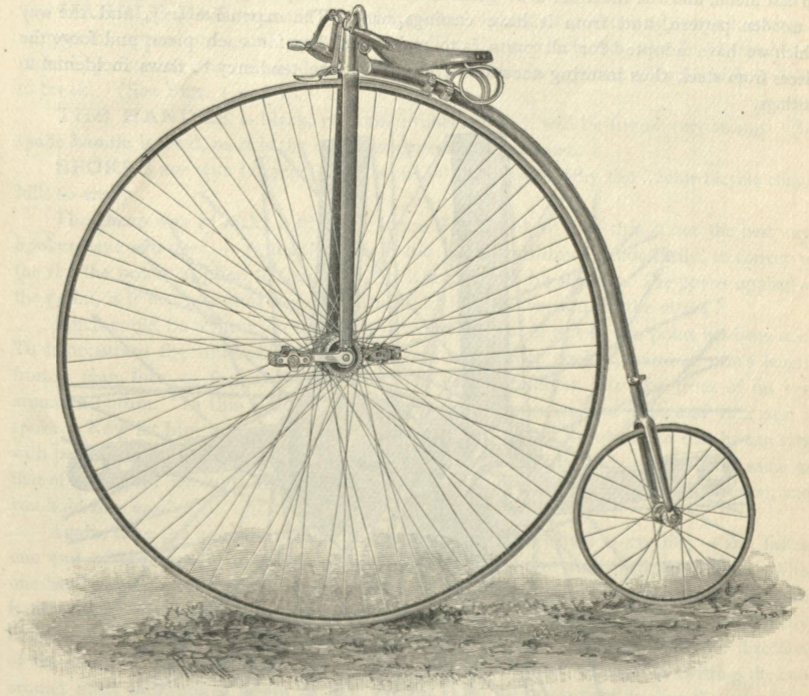

FIG. 14—VICTOR LIGHT ROADSTER.

Among old riders it will not be necessary for us to enlarge upon its merits. Where hills have been climbed, where great road races have been run, where wheels have been tested to their very utmost, the Victor has been found at the front to tell its own story. It has won for itself a name second to none, and we but echo the claims of its riders, when we say that it is entitled to stand at the head. Among its many points of superiority those of coasting and hill-climbing have been particularly remarked, and are indicative of the perfection of the "lines" of the machine. If a bicycle coasts well it shows that the parts are well fitted and the bearings true, and the only time to appreciate this is when the power is taken off; then the machine itself has a chance to talk, and it tells unerringly what the work is. The Victor has gained the reputation of being a coaster *par excellence*, and Victor riders have challenged all comers with success.

I like my Victor better every day, and have never mounted a wheel which runs as **easily,** *and upon which I feel so much at home as upon it. Sunday I took a trip to York, Neb., and back, a distance of over 100 miles by wagon road.*

BERT W. COLE, Grand Island, Neb.

No greater strain is put upon a machine than in hill-climbing, and not only is it a test of the durability of the work, but it is also a test of the running quality. A clumsy machine is a hard hill-climber. Ask any Victor rider how his machine coasts and how it climbs hills.

We want to be understood to say that the Victor Light Roadster contains absolutely no cast metal, and the machine is so guaranteed. The cheap way to make parts is to use a wooden pattern, and from it have castings made. The expensive way, and the way which we have adopted for all parts, is to make steel dies for each piece and forge the pieces from steel, thus insuring accurate form, without the tendency to flaws incidental to castings.

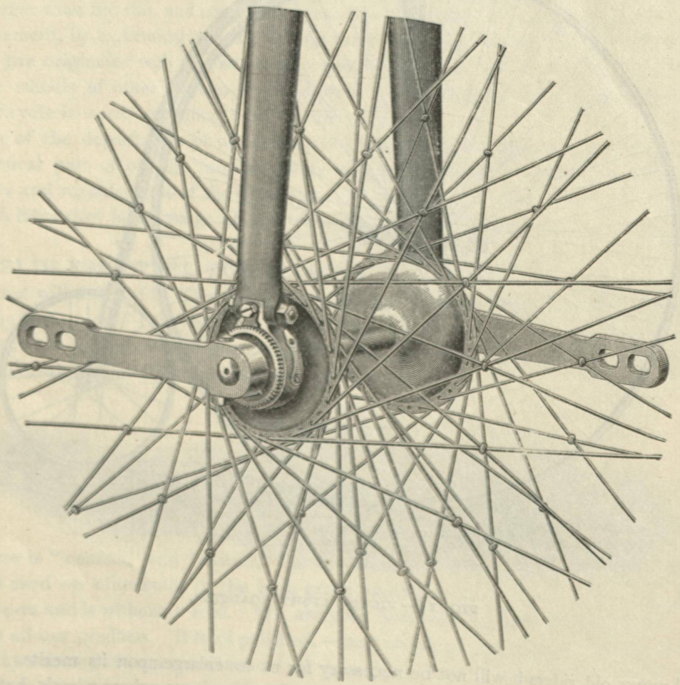

FIG. 15 — SHOWING HUB, CRANK, AND ARRANGEMENT OF SPOKES.

SPINES are of inch-and-a-half weldless steel tubing — a large section, to give rigidity and strength. The rear fork is made straight instead of curving back, in order to carry the step a proper distance from the front wheel.

FRONT FORKS are of weldless steel tubing, with closed, dust-proof head. The ball bearing case is attached to the fork, so that the fork rests directly on a shoulder each side of the ball bearing case.

HUBS. — The front wheel hubs have flanges pinned to the axle and brazed to a shoulder, thus making it absolutely impossible to loosen the axle in the flanges. The small hub is one solid steel forging, making it a very light and strong hub. Felt washers are used on this to make bearings dust-proof. (See Figs. 6 and 15.)

It is the wheel for Biddeford. On runs the Victor always gets there.

CHAS. H. COBB, Biddeford, Me.

In small matters as well as large the critic of the Victor Light Roadster will find that vigilance has been shown in consulting the needs of riders. Heretofore dust shields have rattled, and there has been no means of oiling the lower step in the steering head. Our dust shields are attached rigidly to the swivel head, and cannot rattle, and the lower step is oiled by throwing the backbone to the extreme right, thus opening up a hole which leads directly to the lower step, which is closed except in this position.

HANDLE-BAR is made of weldless steel tubing, tapered and curved, giving it a graceful appearance and great rigidity. The tip to which the handle is attached is formed by drawing the tubing down, instead of attaching a separate piece, which is liable to break. (See Figs. 1 and 16.)

THE HANDLE is black, vulcanized rubber, which will be found very strong. The spade handle is used, as it is the one most generally demanded.

SPOKES are true tangent, which is one of the reasons why the Victor bicycle climbs hills so easily.

The cheap way to make a wheel is to use direct spokes; but this is not the best way. Spokes have two uses, — primarily, to hold the hub in position; secondarily, to convey to the rim the power applied to the pedal. If it is to stand the strain of the power applied at the pedal, is it not best that the spoke should lie in the direction of the strain?

Much could be written on this point — too much that is not to the point has been said. To demonstrate the difference between tangent and direct spokes, stand at arm's length from a man, face to face with him, and hook your forefinger into the front of his vest around a button. In this position consider him as representing a hub, and your arm a spoke. Now let him attempt to turn his back to you. It will be observed that he can turn with perfect ease until the relative position of your arm to his body becomes the same as that of a tangent spoke to the hub of a wheel. At this point his progress is arrested, and you hold him easily.

Again, take the average number of direct spokes in a wheel — say fifty — and fasten one end of the bundle in a vise. Take hold of the free end and push it sidewise. With one hand you can bend them double. Note the fact that their combined lateral strength is fifty times that of a single spoke. Then fasten one spoke in the vise, and pull directly endwise on it. Fifty men could not break it, because it pulls tangent, or in the direction of the strain. In using direct spokes a large part of the work consists in twisting the hub around until the spokes begin to pull tangent. In using tangent spokes the power applied to the pedals is communicated directly to the periphery of the wheel.

In all wheels fifty-four inch and under we use seventy-two spokes; fifty-six inch and above, eighty spokes. We think it well to have plenty of spokes. Small wheels all have twenty-four spokes. All spokes are tied with steel wires at each crossing and soldered, and attached at the rim by means of long nipples, having fifty-six threads to the inch, and counter-bored, so that the strain on the spoke will not come on the thread, but on the full sized wire. (See Figs. 15 and 16.)

THE STEERING HEAD is made with hardened steel cones, polished as smooth as glass, and so fitted that they can be easily oiled. This makes the easiest working and

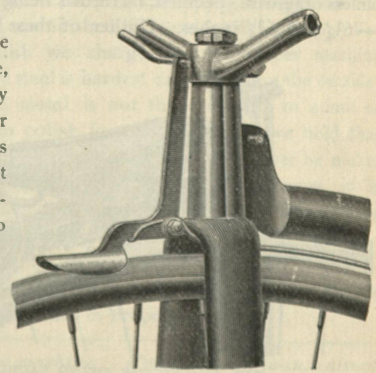

FIG. 16 — VICTOR HEAD, SHOWING MANNER OF ATTACHING HANDLE-BAR.

My Victor Safety "takes the cake." *F. E. DUBOIS, West Randolph, Vt.*

most serviceable head. We do not believe in a ball head for bicycles. It introduces complication and multiplicity of parts, and weakens not only the head, but the swivel. The motion at this point will not average more than one-fifth of a circle, consequently the balls are worn in spots only, and are not constantly trued by complete revolutions, as in ball bearings in other parts of the machine.

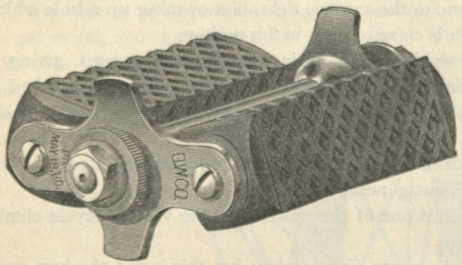

FIG. 17 — SQUARE RUBBER PEDAL.

Though the best ball bearing heads are not controlled by patents, they are not used by any of the principal makers.

CRANKS are made with two holes, instead of slots. (See Fig. 15.) This is a very expensive construction, as it costs twice as much to broach out two holes as one, and broaching is expensive work. We do this, because, as the pedal pin exactly fills the square-cornered hole in which it may be set, the strain is thrown on the crank, which is stronger and better able to stand it than the pedal pin itself, and also in order to insure uniformity of throw, as by observation we find that where riders use a slotted crank, they set the pedals by guess, and almost invariably are found to use one longer than the other. This breaks the rhythm of the pedalling. If riders differ from us in this theory, they have only to file out the web between the holes, and have the old-fashioned slotted crank.

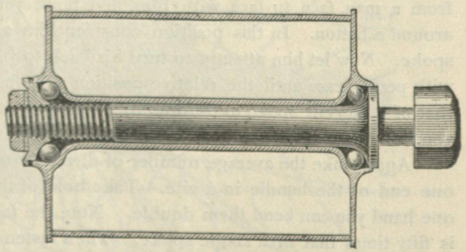

FIG. 18 — SECTIONAL VIEW OF PEDAL, SHOWING BALL BEARINGS.

We shall hereafter make two lengths of cranks, to be known as "regular" and "long." The "regular" is the crank used in the Victor Light Roadster, unless otherwise specified, its throws being 5 and 5¾ inches. The "long" has two throws — 6¼ and 6¾ inches. Either of these lengths will be furnished, at the option of the rider. Cranks are keyed with round, taper pins.

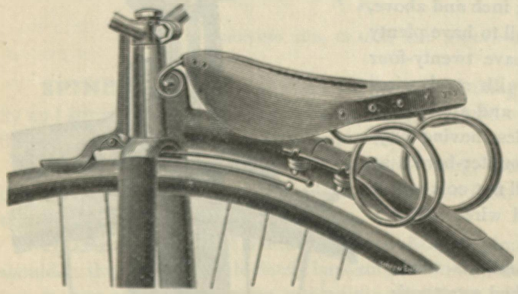

FIG. 19 — VICTOR SWING SADDLE.

PEDALS. — Our square rubber ball pedals have during the past two years continued to grow in favor, and are more generally used than ever. Their great success is due to the feature of automatic adjustment to the curve of the foot, which is the result of the square rubber used. This prevents slipping the pedal,

I have ridden a Victor for two years, and have never spent one dollar for repairs. I have never seen a bicycle that can outcoast the Victor.

ROBT. RODES, Nashville, Tenn.

and makes the square rubber pedal as safe as a rat-trap without its discomforts. All Victor cycles are furnished with square rubber pedals. We were the originators of this class of pedals, and are the only makers who present this device with none of its merits omitted.

THE SADDLE is the connecting link between the rider and the ridden. It is expected to be comfortable, to be in all parts pliable, to absorb by its spring the jar of the wheel, to be easily adjusted to take up the stretch of leather, and, most important of all, to be easily put on and off without tools. We provide all this in our Victor swing saddle. The jar of the machine wears itself away in passing through the long coils of the spring, and by its peculiar construction it has a fore-and-aft swing, which cushions the jar that might otherwise cause a header. The leather seat of the saddle is as easily put on and off as one's hat — it can be taken off at every stop, thus keeping the seat dry and effectually locking the machine, as it cannot be ridden without the saddle. Also, its construction admits of any required tension. It leaves little to be desired in a saddle. The merit of this saddle is attested by the numerous inferior copies placed upon the market.

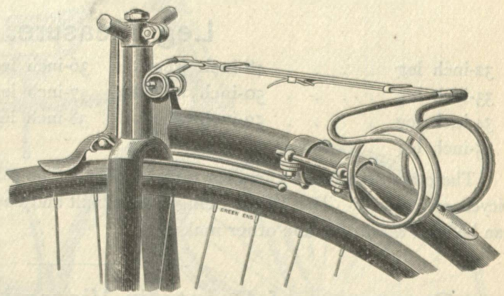

FIG. 20 — VICTOR SWING SADDLE, WITH LEATHER OFF.

THE STEP. — Our experience has taught us that bicycle steps are wanted and not wanted, in a great variety of ways. We therefore put on our machine a light, adjustable step, which can be placed wherever the rider wishes, or, better still, left off entirely.

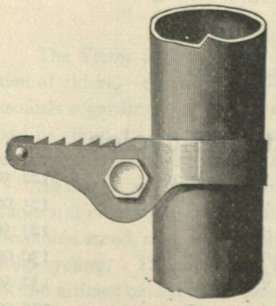

FIG. 21.

The teeth, which prevent the slipping of the foot from the step, are carefully turned in to avoid the possibility of their catching and tearing the clothing.

FINISH. — We make two finishes — standard, with spokes, rims, backbone, and fork-sides in Harrington's black enamel, and all other parts nickeled on copper. Extra, all nickeled on copper, except rims and spokes, which are finished in Harrington's enamel. For this latter finish we charge ten dollars per machine extra. Forged steel is hardest and stiffest on the outside, and since the metal is not thick enough to admit of grinding off to polish for nickel-plating, we hold that hollow rims and tangent spokes should never be nickel plated, not only for this reason, but because it is almost impossible to clean them, which is necessary when they are nickel plated, in order to prevent rusting.

For description of Harrington's enamel, see page 6.

With regard to weights, the fifty-inch Victor Light Roadster, with saddle and pedals on, ready to ride, weighs thirty-eight pounds; other sizes in proportion.

I cannot say anything too good of the Victor machine. I've used my 54-inch almost constantly, riding to and from my business, besides considerable country riding, for a season, and I consider it about as good as new now.

T. M. BARD, Secy. Y.M.C.A., Wilkes Barre, Pa.

We consider these weights as light as it is safe to make for American roads, and while the machines are light, they are so strong and rigid that we do not bespeak for them light riders and good roads. They are built for use on the average American road, and will be found thoroughly stanch and reliable.

See our guarantee on page 20.

☞ See testimonials.

Leg Measure.

32-inch leg	48-inch wheel.	36-inch leg	56-inch wheel.
33-inch leg	50-inch wheel.	37-inch leg	58-inch wheel.
34-inch leg	52-inch wheel.	38-inch leg	60-inch wheel.
35-inch leg	54-inch wheel.		

These are standard figures for measurement. The rule should be to ride as small a bicycle as fits well. The Victor being closely built and having a low saddle, a larger wheel can be used than of some other makes.

Summary of Points in Victor Light Roadster.

ALL FORGED STEEL. — Not one ounce of cast metal.

TIRES. — Finest Para gum, compressed in.

BEARINGS. — Bown's Æolus Ball, all round, including pedals.

SADDLE. — Victor Swing, detachable leather.

RIMS. — Warwick's hollow, new shallow section, very stiff.

HANDLE-BARS. — Weldless steel tubing, cow-horn shape, and tapered to tip; detachable.

SPOKES. — True tangent, tied and soldered at all crossings, attached with long tube nipples.

FORKS AND SPINE. — Weldless steel tubing, of thin gauge and large section.

STEP. — Detachable and adjustable.

DUST SHIELD. — Perfectly tight, with means for oiling.

HANDLES. — Vulcanite, spade pattern; adjustable to any angle.

Prices of Victor Light Roadster Bicycles.

48-inch, all nickel on copper, except fork-sides, spines, rims, and spokes . .	$122 50
50-inch " " " " " " . .	125 00
52-inch " " " " " " . .	127 50
54-inch " " " " " " . .	130 00
56-inch " " " " " " . .	132 50
58-inch " " " " " " . .	135 00
60-inch " " " " " " . .	137 50

All have spade handles and ball pedals. *No extras.*

Nickel finish, all nickel except rims and spokes, $10 additional.

The above prices are for the machine complete, crated, and delivered f. o. b. at Chicopee Falls, Mass., with nickeled B. & S. wrench, nickeled spring-top oiler, tool-bag, and tools for adjusting head. Each item is of the very best and most expensive. See "Interchangeable," page 20.

I have recently bought a 52" Victor, and I think it is the "boss" machine, and so do all the boys. GEORGE B. GRAHAM, *Rochester, N. Y.*

THE VICTOR SAFETY.

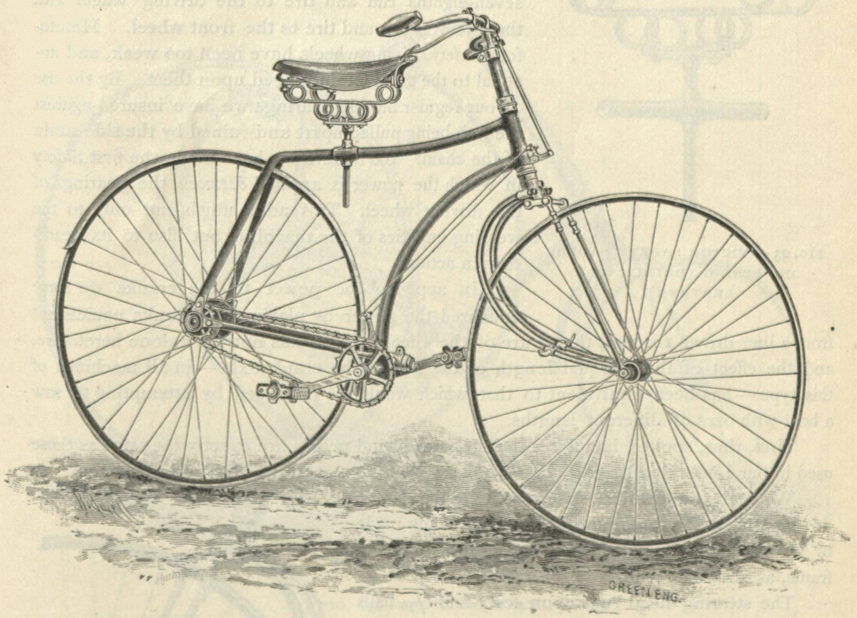

FIG. 22 — VICTOR SAFETY.

The Victor Safety, which was new in 1887, has taken a very high place in the estimation of riders. An idea of the impression it has made may be had by reading the testimonials regarding it. It was not less than a sensation — a genuine surprise to old riders; and its many practical good qualities have so firmly established it that there is no room for doubt that it will hold its own against all comers.

As fast as any, absolutely safe, and well adapted for night and rough riding, it is a successful combination of qualities long desired. Old men have found it a tractable and profitable steed, and it has delighted and captivated those who had formerly held aloof from cycling. This machine, like most of our products, differs from all others. It is one of the articles of our faith never to make blind copies.

As the wheels are small the vibration is great. To compensate for this we have introduced a spring fork which absorbs the vibration, and, in effect, carries with it its own good road. A year's experience with this spring fork has shown us how to perfect it; so that it is presented to-day with confidence that it is one of the indispensable features of a Safety bicycle.

As touching this point we would urge wheelmen to ride a Victor Safety, and then try a similar machine, without a spring fork, and note the difference. It will tell its own tale.

The principal improvement in the spring fork is the introduction of 4 ball bearings in

That Victor Safety is the checker. The more I run it the better I like it, and it is admired by all who see it. CHAS. F. STEVENS, *Elmira, N. Y.*

the upper connections, which provide perfectly for taking up the wear at those points. These bearings run on 40 balls. In the entire machine there are used 176 steel balls, — more than were ever used in any one machine before.

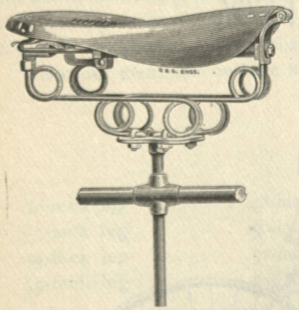

FIG. 23 — VICTOR SAFETY SADDLE AND SPRING (DETACHABLE LEATHER).

The Victor Safety has two thirty-inch wheels, with seven-eighths rim and tire to the driving wheel and three-fourths rim and tire to the front wheel. Heretofore Safety driving wheels have been too weak, and unequal to the great strain placed upon them. By the use of our regular bicycle bearings we have insured against the hub being pulled apart and ruined by the side strain of the chain. We believe we have made the first Safety in which the power is applied *between* the bearings of the driving wheel. This adds much, not only to the wearing qualities of the machine, but also to its steadiness in action.

In applying the power to the cranks we have equalized the power by placing the cranks equidistant from a line drawn through the centre of the wheels. This has not been done heretofore, and the effect of the unequal length of the side of the crank axle — in all machines of this type — has been equivalent to that which would be produced by attempting to row a boat with oars of different lengths.

Tires, rims, spokes, handles, bearings, cranks, and pedals are exactly the same as those used in our Light Roadster.

We apply an ordinary spoon brake to the rear or driving wheel, the fore and aft connection being made by the use of two spoke wires, one each side of the frame, as shown in cut.

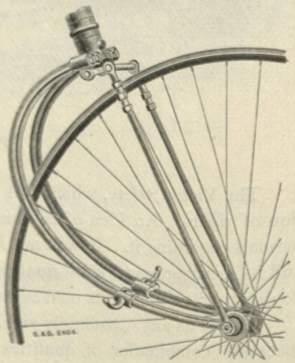

FIG. 24.

The steering head runs upon forty-four $^3/_{16}$ balls (See cut). The tension is automatic, applied by a spring which can be regulated as desired by tightening a nut under the head. In this head balls are used because the motion is almost a complete revolution, and parts are so made that a large number of balls can be used, thus dividing the strain.

One of the most radical improvements in this machine is the alteration which we have made in the angle at which the steering bar is set, by which the sensitiveness of the steering is vastly diminished, and a steadiness is communicated to the whole action of the machine which has heretofore been unknown in this type of bicycle. It is made in one size only, adapted by adjustment of handle-bar and saddle, to different lengths of leg.

This fact is to be considered in the selection of machines for boys. The objection to buying a high grade machine for a growing boy is often reasonably raised, that, as he would outgrow it in a year or two, the extra expenditure would not pay. He cannot outgrow a Victor Safety.

Geared to fifty-four inches, unless otnerwise ordered.

Price, crated, f.o.b., Chicopee Falls, Mass., with nickeled B. & S. wrench, nickeled spring-top oiler, and tool-bag, $135.

See our guarantee, page 20. See "Interchangeable," page 20.

I firmly believe that the Victor has no equal. *H. W. BRUSH, Alliance, O.*

THE VICTOR TRICYCLE.

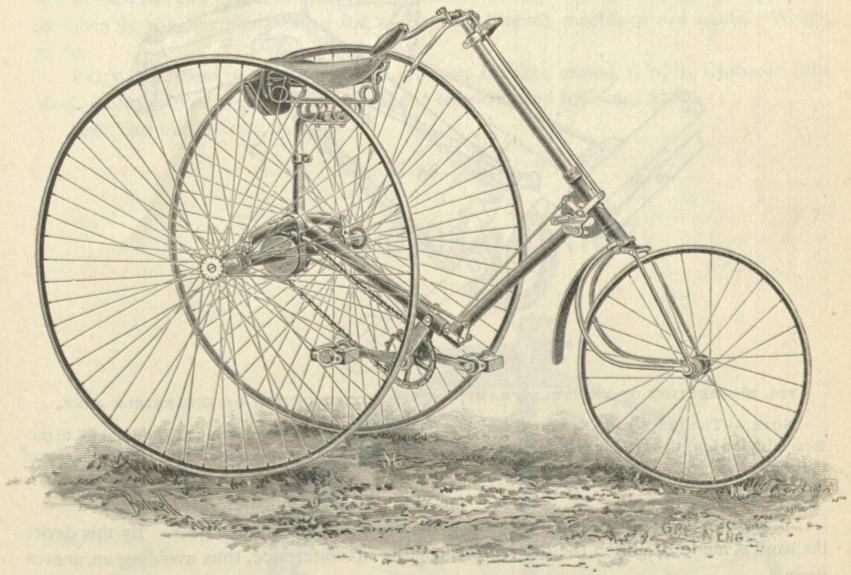

FIG. 25 — VICTOR TRICYCLE.

We were the first American makers of high grade tricycles. Our model of '87 has achieved the most marked success of any tricycle we have ever known. In its construction we made our best attempt to interpret the requirements of tricycle users, and to embody in it all the essentials, and as many as possible of the features that were merely desirable and convenient.

The measure of our success is found in the fact that, in the year's experience, we have found no essential point to change, and we present it for the season of '88, knowing that it shows more good features than any other tricycle.

It is adapted to all classes of riders. In general form it is a bicycle-steering central driving tricycle, with differential balance gear, and spring fork to front wheel, similar to that used in the Victor Safety.

The driving wheels are thirty-eight inch, and the steering wheel twenty-two inch. A larger front wheel is unnecessary, as the only object of the enlarged steering wheel is to overcome the vibration, which end is accomplished by our spring fork. (See Fig. 24.)

Although our wheels are lighter than those of most of the lightest tricycles, they are much stronger, owing to their fine construction, with hollow rims, compressed tires, true tangent spokes, and forged steel hubs, making the highest grade of wheel known to cycle manufacture.

I have tried the Victor L. R., and it is the finest and **easiest** *running wheel I ever was on. Its coasting facilities are simply grand. I have made the longest coast on record in this place.* *WALSTEIN SEYMOUR, Des Moines, Iowa.*

Other parts we have made heavier than is customary. Experience has shown that the breaking of axles is very common. Our inflexible axle is of solid steel encased in a weldless steel tapered tube.

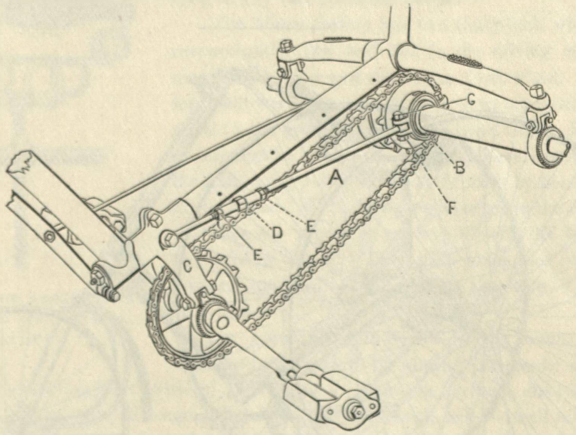

FIG. 26 — SECTION OF TRICYCLE FRAME, SHOWING CONSTRUCTION OF INFLEXIBLE AXLE.

NOTE. — The brace rod, A, bolted firmly at the lower end, and adjustable at the joint D, to conform with the length of the chain, prevents the axle from being sprung out of true by the tension of the chain.

We apply our improved band brake to the drum of the balance gear. By this device the band is made to clinch the drum throughout its circumference, thus avoiding an uneven strain.

The tricycle will be furnished either with hand brake or foot brake; foot brake is recommended as being best on every account.

The differential balance gear used distributes the power equally to both wheels, whether going forward or backward, or turning in either direction in short or long curves.

The gears are of forged steel, and cut by machinery to insure accuracy. They run on steel pins, which have bearings at each end. Generally these gears have been made to run on pinions attached at one end only, which has caused serious breakage from the side strain. The balance gear is perfectly inclosed, so that dust and dirt are entirely excluded. It is divided in the centre in such manner that its two faces form an arch which takes the strain of the driving chain, the strain being always at the top of the arch.

The bearings are hung in double swivels, and will automatically adjust themselves to the axle, insuring a true line of bearings. We make the assertion that it is impossible to get a true line of bearings on an axle when three or more bearings are used. 1. — It is practically impossible to make a perfect adjustment in manufacture. 2. — If by accident the axle is sprung $^1/_{100}$ part of an inch the fact cannot be detected by the eye, but the bearing will be thrown out of line, and friction will result. Our axle is called "Inflexible," because by a brace attached by swivel to a ball bearing on the centre of the axle, and having its lower end attached to the crank hanger, we prevent all springing when power is applied. This supplementary bearing does not affect the axle journals, and is perfectly

The machines are giving good satisfaction. My son went up a hill the other day on his Victor L. Roadster, which is longer and steeper than "Corey Hill."

THOS. E. EVANS, Hazelton, Pa.

adjustable in every direction. Tires, rims, spokes, cranks, pedals, and bearings are exactly the same as in our Light Roadster Bicycle. The length of base is forty-one inches, width of base twenty-nine inches. The throw of crank is adjustable to five and three-fourths or six and one-fourth inches. This machine throughout is built without regard to cost, and, while exceedingly light and graceful in appearance, our use in every case of nothing but the best in material and devices, renders it sufficiently strong for American roads, which are considerably rougher than those for which most English machines are made. Weight, 70 lbs.

PRICE, complete, with chain guard and lamp bracket, crated, f. o. b., Chicopee Falls, Mass., with nickeled wrench, nickeled spring-top oiler, and tool-bag, $160.

☞ See our guarantee, page 20.

THE VICTOR JUNIOR.

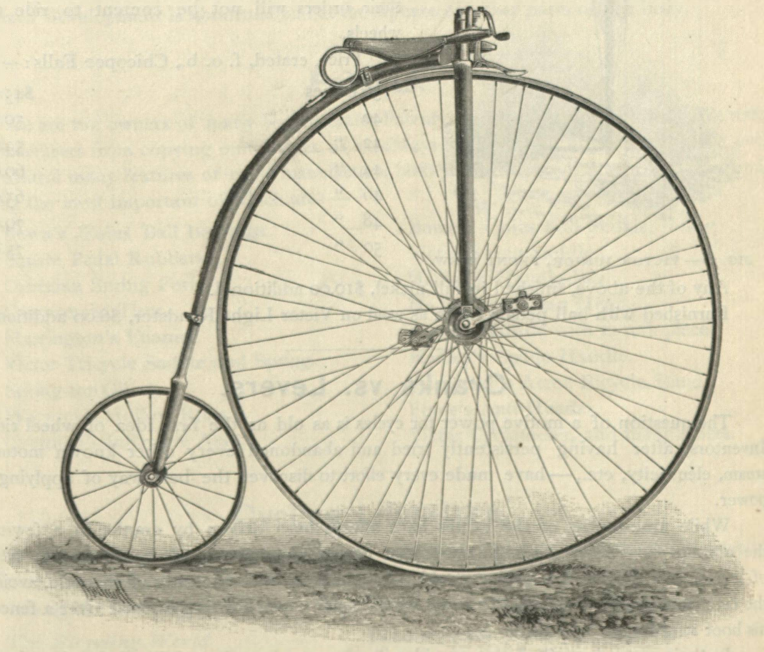

FIG. 27 — VICTOR JUNIOR BICYCLE.

This machine is presented to the rising generation of cyclers. Heretofore bicycles for boys have been like the Frenchman's razor, — "made to sell and not to shave."

We have often been asked to make boys' bicycles, and when, in accordance with this demand, we decided to build this bicycle, we determined to make it a machine to ride.

The Victor Safety is a little gem, and certainly is the greatest success in the line of Safeties yet brought out.

PARLEY P. PRATT, Jr., Salt Lake City.

Its many virtues as a machine to ride will surely make it a machine to sell. While not strictly a high grade bicycle, like the Victor Light Roadster, it is entirely superior to the wheels heretofore in the market for boys. The back-bone and front fork are of regular weldless steel tubing. The hubs, neck and spindle, and all working bearings, are of forged steel; the spokes are double tangent, and attached at the rim with nipples.

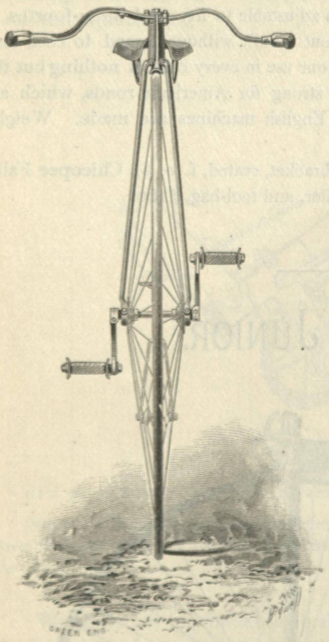

FIG. 28 — VICTOR JUNIOR, FRONT VIEW.

The stock used in the items above mentioned is just the same as that used in the Light Roadster, so it will be seen that in vital points the Victor Junior will be abundantly able to perform the work that will be expected of it. It has spade handles, square rubber pedals, ball bearings to front wheel. It is a new departure in boys' bicycles, and will be found worthy to belong to the Victor family. Boys who see this machine before placing their orders will not be content to ride other wheels.

Price, crated, f. o. b., Chicopee Falls: —

38 inches	$45.00
40 "	50.00
42 "	55.00
44 "	60.00
46 "	65.00
48 "	70.00
50 "	75.00

Any of the above, finished in full nickel, $10.00 additional.

Furnished with ball pedals, same as used on Victor Light Roadster, $6.00 additional.

Cranks vs. Levers.

The question of a motive power for cycles is as old as the first idea of wheel riding. Inventors, after having persistently tried and abandoned every other known motor, — steam, electricity, etc., — have made every effort to discover the best way of applying leg power.

While nine-tenths of the cycles have always been driven by cranks, in a few cases the attempt has been made to show that power could absolutely be created by the use of levers, and that if the power could be applied on one side only of the axle, avoiding the return stroke of a crank, the result would equal a man's lifting himself over a fence by his boot straps.

In their eager pursuit of this one idea its advocates have lost sight of the fact that the question is of the economical use of the power we have, and that it is as impossible to *create* power as to overcome the laws of gravitation. For hundreds of years the machinery of the world, practically speaking, has been driven by cranks. In this fact we have the testimony of the highest mechanical genius the world has known.

Engineers agree that the crank is the only economical method of applying power — that it transmits to the driven shaft ninety-nine per cent. of the power applied. In no

I find that the Victor Light Roadster is equal to all the praise you have given it.
M. P. GREEN, Charlotte, Mich.

class of machinery except cycles is the attempt made to use levers where cranks could be used.

Careful experiments have shown that the use of a lever is misleading, in that, while power can be converted into speed and speed into power, the development of either is at the expense of the other. It is at once evident that with levers we have more friction, more weight, and more complication than with cranks, and that absolutely more power is required, as the springs which are used to return the levers must be forced down at the expenditure of power which should be applied to the propulsion of the machine. Several years ago lever power was tried in England on bicycles and tricycles and extensively introduced, but has been so generally abandoned that there is today no machine of importance so driven. The worst feature of the lever action, however, is that the movement of the foot does not become automatic, as is the case in the use of the crank. There is absence of regularity, and a consequent loss of momentum. A rotary motion is more natural to the feet, being more like walking, while a lever motion is like treading water while swimming, or like constantly climbing upstairs. Not only does the mechanical use of the legs require a regular movement, but it is better to use always the same length of crank, never varying the throw.

A special set of muscles can be trained to such work as the use of the lever action; but such development is abnormal and at the expense of other parts of the body.

Patents.

We are the owners of many United States Patents, and several in England. We warn manufacturers from copying our devices, as we always have patents applied for. We own and control many features of cycle manufacture, both in the United States and England, among the most important of which are: —

Bown's Æolus Ball Bearings.
Square Pedal Rubbers.
Overman Spring Fork.
Compressed Tires.
Harrington's Enamel.
Victor Tricycle Saddle and Spring.
Spring-top Oilers.
Warwick's Hollow Rims.
Overman's Inflexible Axle.
Bown's Æolus Ball Pedals.
Victor Swing Saddle.
Hadley's Handle-Bar.
Hadley's Steering Head.
Duplex Whistle with mouth-piece.
Hadley's Spade Handle.
Wicksteed's Acme Bicycle Stand.
Foote's Anti-Header.
Victor Cyclometer, and many others.

Cycling Literature.

We advise riders to subscribe to one or more wheel papers as a means of keeping informed of cycling events.

Among the best papers are: —

The *Bicycling World*	$1.00 per year	(weekly),	Boston.
" *L. A. W. Bulletin*	1.00 "	"	"
" *Wheel*	1.00 "	"	New York.
" *Wheelman's Gazette*	.50 "	(monthly),	Indianapolis, Ind.
" *Outing*	3.00 "	"	New York.
" *Spectator*	3.00 "	(weekly),	St. Louis, Mo.

I have ridden a Victor since last June a distance of over 600 miles, and considering my 235 pounds I think it as good a recommendation as any one could wish. I consider it the best wheel made.
H. L. CASE, Lincoln, Neb.

Guarantee.

Our machines are guaranteed to be free from imperfections in material or workmanship; and we will replace without charge any parts returned within a year from purchase of the machine which give evidence of such imperfections.

"INTERCHANGEABLE."

Riders cannot place too much importance upon having the machine they select ***INTERCHANGEABLE.*** If the parts are not made interchangeable, it means that when a repair is made each part will ***have to be fitted,*** and the machine when repaired will be a ***patched-up affair,*** and the rider's pocket will need to be patched.

The expense of special fitting is always heavy and generally unsatisfactory. Remember the question is not whether you can ***fit*** the parts of a machine which you propose to ride; it is, ***will the parts invariably fit without the slightest alteration? We guarantee that parts of the Victor bicycle will not require to be fitted.*** If you break a Victor bicycle and replace the part it will be ***exactly new*** at that point, and not a cobbled-up, ill-fitted trap.

If a certain part (say the crank) in ten machines of the same pattern is fitted in ten different ways — as must result by handwork — it is evident that at least nine out of the ten ***are wrong,*** — ***i.e.,*** they cannot all be different and all be right.

When made interchangeable, parts, being all made by the ***same*** dies and cutters and finished to the ***same*** gauges, ***must be alike.***

"Things which are equal to the same thing are equal to each other."

Records.

In the early days of cycling, before the speed and endurance of bicycles was known, and racing was used as a means of determining these two points, we kept a team of racing men, and gave much attention to the sport.

Ours was the first American machine to hold world records, and we have held more world records than were ever held by any other machine.

Owing to the dishonest claims of hired riders records have fallen into bad repute.

Open contests on the road are the most reliable test of the speed and quality of the machines ridden.

In the great Clarksville 100-mile race run at Clarksville, Mo., over common roads, all the principal machines of the country were entered. We entered two Victor bicycles and finished first and second, with the bicycles ridden in as good condition as when they started.

In the great Minneapolis race for the State championship, 20 miles straight away in the country, the first *five* men in rode Victors, all other principal makers being represented

I purchased the first Victor Safety you forwarded to this city, and it is ***simply perfection.*** *For hill-climbing, speed, and* **ease** *of motion, it cannot be surpassed.* *CHAS. P. ABBEY, 121 Maiden Lane, New York City.*

in the race. Similar tales could be told of Atlanta, Ga., Crawfordsville, Ind., and many other places. We claim that the Victor is not surpassed for speed by any machine in the world.

The greatest distance ever known to have been ridden during a single year was done on a Victor bicycle by G. J. Loomis, of Westfield, Mass., who rode 13,498 miles. At the end of the year his bicycle was in good, serviceable shape.

CYCLING SUNDRIES.

The Victor Cyclometer.

This Cyclometer is the result of several years' experimenting. It is simple and accurate, and combines all points known to be valuable in cyclometers, besides some features which have heretofore been unattainable. It is two cyclometers in one, the main dial reading to 1,000 miles, and the trip dial, to be used for a single day or run, reading to 100 miles. This cyclometer is actuated by an entirely new device, being positive in action and so made that the entire vibration force that can be brought to bear upon the train is absorbed by a single coiled spring, thus saving the wheels from the wear caused by the constant jarring of the machine. It is water-tight and cannot rust. The axle cyclometer has cone bearings adjustable for wear. It will be found to be a beautiful instrument, complete in all matters of detail, and the accuracy attained marks a new era in cycle cyclometers.

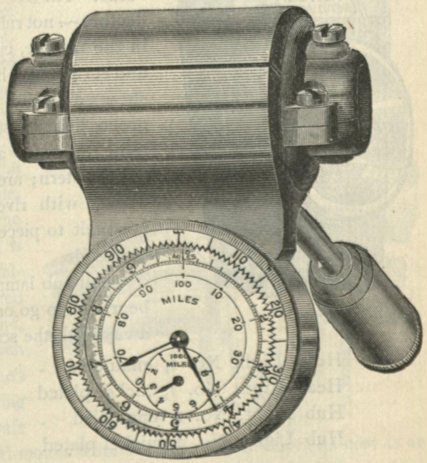

FIG. 29 — VICTOR CYCLOMETER.

Nickel plated, for hub, price $10. In ordering state size and make of machine for which it is wanted.

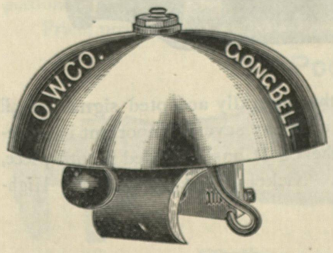

FIG. 30 — GONG BELL.

Bells.

All cast bronze, nickeled. Cast metal has a clearer ring than forged metal. Gong bell has a loud, clear ring; strong and nothing to get out of order. Price $1.00.

Victor! Yes, you deserve your name, for you are the **easiest** *running wheel in the market.* *D. T. FLICK, Supt. Gas Co., Newcastle, Pa.*

Bown's Æolus Ball Pedals.

Every bicycler who is riding a wheel with common pedals is looking forward to the time when he can have a pair of these beautiful Æolus Pedals. They are used on all the finest machines. We have made them of the best steel forgings, with the pins larger and tapering, thus greatly lessening the tendency to bend and break. Ends of pedals are of one solid piece, avoiding joints and rivets; furnished with our patent square rubbers.

Price, complete, $10 per pair. (See Figs. 17 and 18.) Extra wide, $10. Rat-trap, $10. All are nickel plated. (See cuts.)

Lamps.

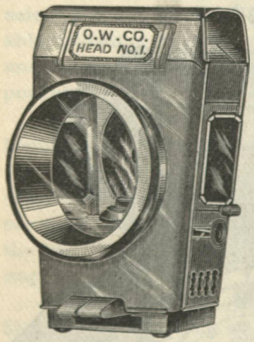

FIG. 31.

The O. W. Co. Lamps lead the market in point of value. All have very deep reflectors — not ruined by a hole in the middle, cut-glass front, and screw wick holders. They show a white light ahead, green light to starboard, red light to port, and two red lights astern; are made almost wholly with rivets, and will not melt to pieces as soldered lamps do.

All hub lamps have metal bearings to go on axle, doing away with the screw fenders.

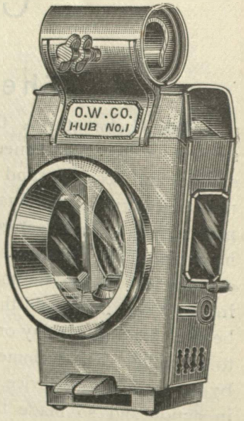

FIG. 32.

Head Light No. 1, enameled	Price, $4 50
Head Light No. 1, nickel plated	" 6 00
Hub Light, No. 1, enameled	" 5 00
Hub Light, No. 1, nickel plated	" 7 00

Duplex Whistle.

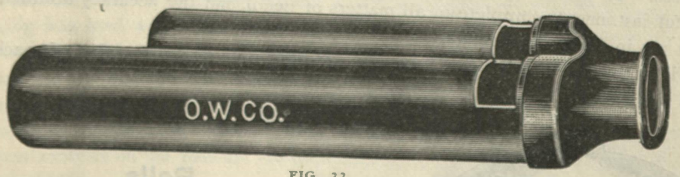

FIG. 33.

This Whistle (cut full size, chain not shown) is the generally accepted signal for all cyclists, and should be always ready. As made by us it has several important improvements. It blows with half the wind required by others. It has a beaded mouth-piece, which enables riders to hold it in their teeth, etc., etc. Nickel plated, with chain. Highest quality made.

Price, post-paid, 25 cents.

If I have congratulated myself once on being the owner of a Victor I have done it ten thousand times. They are the best in the world.

H. C. WALLACE, Scranton, Pa.

Victor Swing Saddle.

The Swing Saddle is the latest thing in a combined saddle and spring. Has a fore and aft motion, thus removing a common source of "headers." This saddle has the great advantage of being readily removed, by displacing the leather seat, which is done by unhooking it at the front. When the leather stretches the spring can be placed farther back, thus compensating for the sagging. A larger wheel can be ridden with this saddle, as the rider sits very low over the backbone.

Price, nickel plated, with clips for attaching, $6. (See Figs. 19 and 20.) Patented in the United States and England.

Foote's Anti-Header.

It can be applied to any bicycle in two minutes. It acts, when in position, by preventing the forks from moving forward faster than the top of the wheel. When the wheel encounters an obstacle and the forks attempt to swing forward, they are clamped, momentarily, to the rim and carry the wheel forward and over the obstacle, if it is not too large. As it offers no obstruction, at any time, to the forward motion of the wheel, if the latter is carried to the top of the obstacle before the rider passes a vertical line through the axle, it will roll on and he will not fall. If the obstacle is too large, so that the wheel is not carried over, the force of the fall is lightened, as the centre of revolution is transferred from the hubs to the obstacle on the ground, and the sweep followed by the saddle is much longer, thus giving more time to save one's self. It prevents the wheel from revolving backward, thus making the pedal mount safe and easy, and making possible a still pedal mount from behind. It is worth its cost as an aid in learning the pedal-mount. It prevents all danger of the wheel rolling back, from under the rider, when climbing steep hills. It steadies the running of a bicycle by preventing all kicking up of the little wheel. It makes stacking and resting the wheel easy. It can be instantly thrown out of action, if desired, when handling the wheel. It makes a safety bicycle out of the ordinary crank machine. It is *not* claimed that this device will prevent *all* liability to falls, but it *will* prevent nine-tenths of the headers, and add, proportionately, to the rider's sense of safety and comfort in riding.

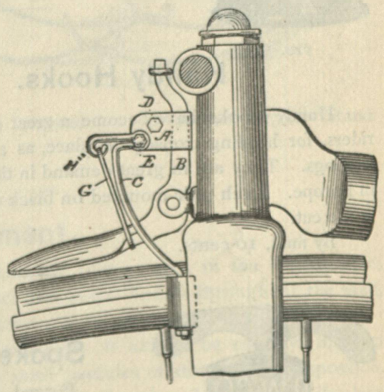

FIG. 34.

Price, post-paid, $1.50.

Pocket Wrench.

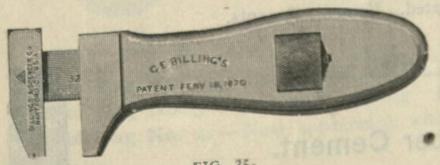

FIG. 35.

The Billings and Spencer "Yankee Wrench" is favorably known on two continents and has a reputation for strength and compactness. Opens one inch, and is a solid steel forging.

By mail, 4-inch blued steel, 75 cents; nickeled, $1. Larger sizes in stock.

The Victor Safety which I purchased last fall has proved to be all you claimed for it, and fully equals my expectations in every respect. It is a great success as a winter machine.

A. A. HATHAWAY, Milwaukee, Wis.

O. W. Co. Oils.

FIG. 36.

We put up the best lubricating and lighting oils in our patent spouted cans, which will be found a great convenience and economy in using the oil. These oils are the best made, and we guarantee satisfaction. Our agents are authorized to refund the price where there is any ground for complaint.

Lighting oil, price per quart . .	60 cents.
Lubricating oil, price per pint . .	50 "

For the trade, securely packed in one-dozen cases.
We cannot ship except in full cases.

Handy Hooks.

Handy Hooks have become a great convenience to riders, for holding trousers in place, as a substitute for leggings. They are in great demand in this country and in Europe. Each pair mounted on black card, as shown in the cut.

By mail, 10 cents.

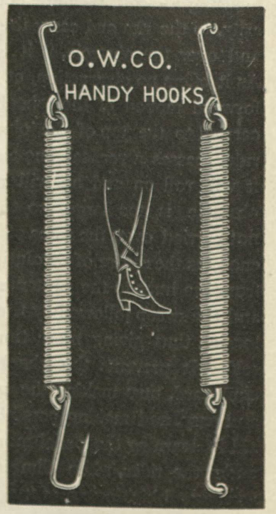

FIG. 37.

Spoke Grip.

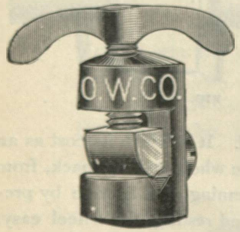

FIG. 38.

Forged steel, nickel-plated. New design, compact, and very effective.

Price, 60 cents.

Victor Spring-Top Oiler.

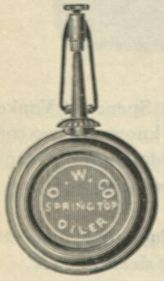

FIG. 39.

No cap to lose. Opened and shut instantly. Cap cannot come off. Clean, convenient, handsome. The finest oiler ever offered to the cycle trade.

Brass, nickel plated. By mail, 25 cents.

Rubber Cement.

For mending tires, one-ounce bottle, 25 cents.

I consider the Victor the best wheel in the market.

BENJ. D. SMITH, Pittsburg, Pa.

Warwick's Hollow Rims.

We are sole American owners of this very valuable invention, and are prepared to supply all sizes, of our own manufacture. Prices furnished on application. For description of these rims, see pages 4 and 5.

We do not drill rims where ordered for other wheels than our own.

Acme Bicycle Stand.

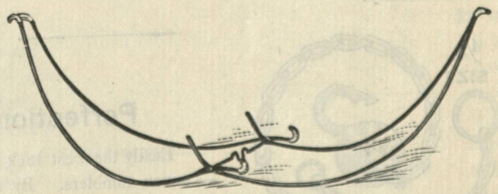

FIG. 40.

The Acme Bicycle Stand was invented by Charles Wicksteed, of England. We purchased the patent, and since then have added this item to our manufacture for the cycling trade. There is no device which so completely provides for handling the bicycle either side up. It is easy to clean one's machine when inverted on an Acme Bicycle Stand. Every rider should own one.

Price $2.

Tire Cement.

We are makers of Tire Cement, and most of the cement used in the United States is made by us. It is used by large wheel makers and large dealers throughout the land, and we refer to every one who has used it to testify as to its merits.

If cement is good it must be adhesive and cohesive. It cannot be cohesive if, when pulled out in fine threads (heated), it shows small particles of dirt in its composition. Please heat a piece of O. W. Co. Cement and draw it to a fine thread, and notice its clean appearance. We invite comparison in this and all other respects.

The best is the cheapest. Prices furnished to large makers and dealers.

Tool Bags.

NO. 1.

FIG. 41.
VICTOR TOOL BAG.

NO. 3.

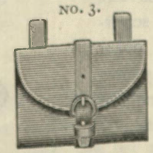

FIG. 42.

NO. 4.

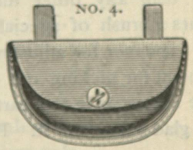

FIG. 43.

Tool Bag No. 1. — As furnished with the Victor Light Roadster. Price, $1.50.
Tool Bag No. 3. — A very durable bag. Price, $1.50.
Tool Bag No. 4. — Neat appearance, with blocked front of one piece leather Price, $1.50.

Your Victor Safety attracts much attention. It has proved faster on the road than any other wheel. Its **ease** *of running and speed are a surprise to every one.*

A. McALPINE, Bradford, Pa.

Bown's Æolus Ball Bearings.

We have purchased this very valuable patent, and are prepared to supply the bearings and pedals in large and small quantities to wheel makers and users. We are the only makers of this bearing in the United States, and confidently present it as the only perfect ball bearing made. It is impossible to make an adjustable bearing without using this patent, as it covers broadly the method of side adjustment. Any attempt at an adjustment from the bottom is worse than nothing, as it throws the true circle of the bearing groove into an ellipse. A ring of balls can only be adjusted by a bevelled surface moved laterally.

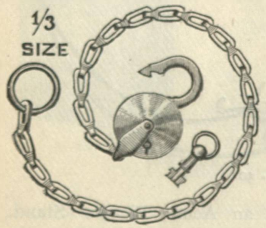

FIG. 44.

Perfection Bicycle Lock.

Easily the best lock in the market. Is "unpickable" — seven tumblers. By mail, $1.

Plumbago.

Dry — to be applied with a brush to the chain, and to be used with an ordinary oiler for other parts of the machine. When a bearing is glossed over with plumbago, it will run a long time without attention. Tricycle chains should have no other lubricant. It should be used in bearings with oil.

Price, per can of one-half pound, 50 cents.

Cycle Brush Tool.

This is an article which should be used to be appreciated. The use of a brush for cleaning bearings and other inaccessible parts, from sand and dirt, will be found much more satisfactory than any other method. This tool combines a brush of special pattern, a screw-driver, a spanner for adjusting bearings, and a sharp point for picking out dirt that may have become encrusted in the parts. Try it and you will be glad you found it. Price, 75 cents.

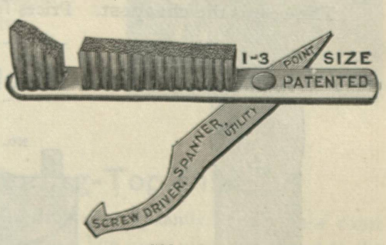

FIG. 45.

Screw-Driver.

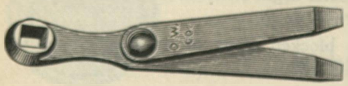
FIG. 46.

Forged steel, hardened. No tool-bag is complete without it.

Price, by mail, 25 cents.

"I am riding the Victor Light Roadster. It is the best wheel made.
C. R. HOTCHKISS, Memphis, Tenn.

Price List.

Victor Light Roadster Bicycle	*See page* 12
Victor Junior Bicycle	" " 18
Victor Tricycle	" " 17
Victor Safety	" " 14
Victor Cyclometer, hub, nickeled	$10.00
O. W. Co. Head Lamp, No. 1, black	4.50
O. W. Co. Head Lamp, No. 1, nickeled	6.00
O. W. Co. Hub Lamp, No. 1, black	5.00
O. W. Co. Hub Lamp, No. 1, nickeled	7.00
Bown's Æolus Ball Pedals, nickeled, with square rubbers	10.00
Bown's Æolus Ball Pedals, rat-trap	10.00
Bown's Æolus Steel Balls	08
Duplex Whistle, with mouth-piece and chain	25
Spoke Wrench (for direct spokes), steel, nickeled	60
Nipple Grip, for tangent spokes	50
B. & S. Wrench, blued	75
B. & S. Wrench, nickeled	1.00
Acme Wrench, nickeled	75
Gong Bell, nickeled	1.00
Stop Bell, nickeled	1.00
Serrell Bell, nickeled	2.50
Hill & Tolman Bell	3.00
Foote's Anti-Header	1.50
Victor Swing Saddle and Spring, nickeled	6.00
Screw-Driver, forged steel, hardened	25
Tool Bag, No. 1, as furnished with Victor Cycles	1.50
Tool Bag, No. 3	1.50
Tool Bag, No. 4	1.50
Handy Hooks (on cards), per pair	10
Long Handy Hooks "	20
Spring-Top Oiler, brass, nickeled	25
Leather Case for Spring-top Oiler	50
Cement for tires, per pound	1.00
Cement, per stick, 2 ounces	25
Rubber Cement, for mending tires, 1 ounce bottle	25
O. W. Co. Lubricating Oil, patent spouted cans, per pint, of dealers only	50
O. W. Co. Lighting Oil, patent spouted cans, per quart, of dealers only	60
Acme Bicycle Stand	2.00
Plumbago, dry, half pound	50
Cabinet Photo of Victor Light Roadster Bicycle	15
Cabinet Photo of Victor Tricycle	15
Cabinet Photo of Victor Safety	15
Cabinet Photo of Victor Junior Bicycle	15
O. W. Co. Enamel, 4 ounce bottle	50
Cycle Brush Tool	75
Perfection Lock and Chain	1.00

Warwick Hollow Rims, prices on application.

Ah, there! We, the undersigned, can vouch from experience as to the strength and superior running qualities of the Victor bicycles.

Out of twenty-three members, we have twenty-two Victor riders. We find it the only wheel that will stand the rough roads, and enable us to climb the hills in our rough and hilly country.

KENTON WHEEL CLUB, Covington, Ky.

The Victor Safety is the **easiest** wheel I was ever on, and I have tried nearly every make. M. M. WOOD, Erie, Pa.

I purchased one of your Safety wheels, and think it is the finest and **easiest** running wheel I ever rode. R. BOVEE, Trov, N.Y.

Stay there! I would not change my mount under any circumstances.

GEORGE A. GORGAS Harrisburg, Pa.

After having ridden different makes of tricycles, the '87 Victor included. I decided to ride the latter, and have ever since been satisfied.

It embodies every essential or desirable feature in a tricycle. It is easily mounted or dismounted; comfortable when in saddle; a complete dodger of obstructions, which often appear suddenly; climbs hills with remarkable **ease,** and is **easily** controlled in coasting. I have ridden into the country, over hard hills, and in places through sand and loam, nine miles in one hour and twenty-four minutes; and, after an enjoyable visit, returned, over the same road, the same afternoon, and felt no inconvenience from the exercise. I once rode over rugged, rough hills and roads six miles in thirty-seven minutes, and without extraordinary exertion. LA FAYETTE STEVENS, Elmira, N.Y.

63 years of age.

Having ridden the Victor Safety during the past season I wish to add my testimonial to the large number you already have. Mine is as rigid as it was the day I bought it, and if I could not get another I would not part with it for any consideration.

FRANK P. CARMANY, South Bend, Ind.

Downs them all. The Victor is far ahead of any other wheel I have ever mounted, and I have owned and ridden about all the first-class wheels. For **easy** running, hill-climbing, coasting, and rigidity, it can't be beaten. We have a club of fourteen members, all first-class wheels, and I can "down" any of them on a coast. S. W. ZENT, Bryan, Ohio.

GENTLEMEN, — The Victor Safety I bought from you last summer has given entire satisfaction. It is pronounced by all who see or try it the best bicycle in the market. It is unequalled for climbing hills, coasting, and rough roads. I have owned several bicycles of other kinds, but this is the best. J. S. JENSEN, Salt Lake City.

Easy to sell. As a dealer I desire to express my satisfaction with your wheels. Having sold in the past four years nearly every sort of bicycle known to this country, I am free to say the Victors sell the **easiest,** give the best satisfaction, and the least trouble after sale, of any I have handled.

E. N. BOWEN, Buffalo, N.Y.

I am delighted with my Victor Safety; want nothing better.

W. H. LYTER, Harrisburg, Pa.

Record for size. The Light Roadster, which you built for me last spring, has more than met my expectation. I have given it many severe tests on rough roads, and although it is an uncommonly large wheel (*64 inches*), I can find no trace of weakness or untrueness. I consider the Victor the best wheel made, it being extremely light-running, and combines lightness with rigidity.

JOHN V. BROWNELL, Wilkes Barre, Pa.

We sold a Victor Safety, last week, to a party who had bought a —— the week before, and paid $25 on it. He tried one of our Victors, and after riding it said he was willing to give up his $25 that he had paid on the ——, as he thought there was more difference than that in the machines. GEO. F. HIGGINS & CO., Denver, Col.

Have ridden the Victor Safety one season, and consider it superior to any wheel I have ever ridden. It runs very **easily,** and is perfectly free from any jar. I would not have any other. G. G. HUBBARD, Toledo, O.

Gets there first. In my estimation the Victor bicycle simply gets away with anything now on the market, and if the future wheels of this make are as good as the one I rode this season, I shall never ride anything but a Victor. In point of workmanship and material there can be no better, and as to speed, — well, it always gets there first. C. H. DEGROAT, Milwaukee, Wis.

The Victor tricycle I had of you last season is the best I ever rode. To-day it is in tip-top order, and good as new. I am perfectly satisfied with it.

T. G. HOLMES, Bristol, R.I.

That run on the Safety is good enough. The Victor wheels are the only ones for me any way. W. S. MILLS, Warren, R.I.

They borrow them. Have ridden the Victor since July, 1885, and will say that as hill-climber or coaster it has no equal. In the road races hereabouts it has been borrowed on more than one occasion on account of its **easy** running qualities. W. H. WYLIE, *Captain St. Louis Cycle Club*, St. Louis, Mo.

Safety arrived yesterday. Took my first ride this morning (never ridden a wheel before), and to say that I was pleased does not begin to express my feelings. I was simply delighted to find, after getting control of my wheel, in fifteen minutes, and getting somewhat accustomed to the dizzy height of five feet, that, in point of speed, I could **easily,** to say the least, be "in at the death." My office was continually thronged yesterday to see what they termed the "Little Beauty." Our expert rider says it is the finest trick-wheel he ever saw. It is more than you claim for it, and the workmanship is as fine as an American watch. C. W. BRONSON, Cherry Valley, N.Y.

For sale. For a short time I had the glory of possessing the second Victor bicycle in this city, but "our boys" were not slow to recognize a good "bike," and now we have in our club a majority of Victor wheels, and those who ride other makes hope it is only a question of time when they can dispose of their "traps" and ride the only perfect wheel.

EDWARD C. TOIE, *Lieutenant of Kenton Wheel Club*, Covington, Ky.

P. S. — Any one wishing to purchase one of the above-mentioned "traps" will oblige the owners by communicating with the club.

On and off, for the past seven years, I have been a rider and owner of various ordinary and safety bicycles. I have now, for some time, been riding one of your Victor Safeties, doing all my city collections and business in all kinds of weather, besides taking longer trips. I find it the most comfortable and enjoyable wheel I have yet ridden.

ALBERT L. ARNOT, Cincinnati, O.

Not a cent.

I have ridden my Victor bicycle over all kinds of roads for over two years, and in all that time it has not cost me one cent for repairs. I can recommend the Victor to any one wishing a *good* wheel.

FORD BRANDON, Newcastle, Pa.

I think the Victor *the best* wheel, and I speak from experience, as I have ridden other wheels. I bought my wheel second-hand last April, and my Cyclom. tells me I have ridden 1,800 miles since then, and it has not cost me a cent for repairs.

THOMAS J. REBER, Northumberland, Pa.

Have ridden the Victor Light Roadster 2,000 miles on my western trip, and it did not cost me a cent for repairs, although I rode over some of the worst roads in the United States. In the last three years I have ridden eleven machines over 17,000 miles, and the Victor Light Roadster stands the best.

W. T. FLEMING, Philadelphia.

I have been riding a Victor since last July, covering over 2,000 miles, and not a cent for repairs yet.

M. W. TSCHUDDI, Denver, Col.

The only.

I have ridden your Safety from Cleveland to Niagara Falls and return, and I must confess that I believe it to be the only practical wheel for absolute safety and comfort.

T. S. HANNA, Pittsburg, Pa.

Your Victor Safety, ridden by me during the past season, is certainly the finest wheel in the land.

J. E. REESE, Warren, Pa.

Good enough.

A Victor is good enough for me.

CHARLES F. HOADLEY, Naugatuck, Ct.

The Victor Light Roadster bicycle has given satisfaction beyond my expectation. On long or short runs, up hill or down, the Victor is good enough for me.

FRED. WESTLAKE, Elmira, N.Y.

I have ridden the Victor Safety over a thousand miles, and am very much pleased with it, and take pleasure in recommending the Victors to my friends.

WOODRUFF JONES, Philadelphia.

Facts.

A careful canvas shows twenty-eight wheels owned in the town, of which fifteen are Victors. Facts are stubborn things.

F. W. TOLLES, Naugatuck, Ct.

I can say of the six different bicycles I have owned and ridden, in the last four years, the Victor Safety leads them all. Never went up-hill with as much ease on any other. For coasting it is as safe as a buggy, and I find, on a level, I can keep up with any of the boys.

O. T. ALTER, Pittsburg, Pa.

The above are only samples of the hundreds we are obliged to leave out on account of lack of space. They snow in at our house.

SUGGESTIONS.

Correspondence must be sent to Boston.

We deliver all goods f. o. b. at Chicopee Falls, Mass., when our responsibility for carriage ceases.

No Charge for Cases or Cartage.

Our terms are Net Cash with Order.

When goods are ordered C. O. D. a sufficient amount to cover carriage both ways must be remitted.

We make no deviation from our List Prices.

No goods should be shipped to us without first obtaining instructions from our Boston Office.